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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,925	09/07/2004	Dong-Seung Seen	100528.0007US1	7725

34284 7590 01/16/2007
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EXAMINER

MAKAR, KIMBERLY A

ART UNIT	PAPER NUMBER
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1636

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/506,925

Applicant(s)

SEEN ET AL.

Examiner

Kimberly A. Makar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,5,7,9,11 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4,6,8,10,12,14,15 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's election without traverse of group I in the reply filed on 10/25/06 is acknowledged.
2. Claims 2-3, 5, 7, 9, 11, and 13 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/25/06.

Claim Objections

3. Claim 4 is objected to because of the following informalities: Claim 4 is not grammatically correct. Claim 4 misspells the amino acid "proline" as "prolin" and also the amino acid "leucine" as "leucin." Appropriate correction is required.
4. Claim 6 is objected to because of the following informalities: Claim 6 is not grammatically correct. Claim 6 is missing the article "a" between "comprising foreign peptide or protein" thus should read "comprising a foreign peptide or protein". It is also missing the article "a" between the phrase "part of protein" and should read "part of a protein." Appropriate correction is required.
5. Claim 10 is objected to because of the following informalities: Claim 10 is not grammatically correct. Claim 10 is missing the article "the" between "wherein peptide or protein" thus should read "wherein the peptide or protein". It is also missing the article

"the" in the phrase "a part of protein binds calcium" and should read "a part of the protein binds calcium." Appropriate correction is required.

6. Claim 12 is objected to because of the following informalities: Claim 12 is not grammatically correct. Claim 12 is missing the article "a" between "comprising DEVD" thus should read "comprising a DVED". Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 4, 6, 8, 10, 12, and 14-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 1 (and dependent claims) recites an enhanced inserted yellow fluorescent protein, wherein the 145th amino acid of YFP (yellow fluorescent protein) comprises amino acid sequence of YGGSGAS (SEQ ID NO:1). It is unclear if SEQ ID NO:1 is directed to an entire enhanced inserted yellow fluorescent protein (that comprises more than 145 amino acids) or the amino acid sequence YGGSGAS listed in the claim. The sequence listing provided by applicant lists an amino acid sequence comprising 738 residues. However there is no sequence comprising YGGSGAS at amino acid 145, or listed anywhere in SEQ ID NO:1 at all. It is unclear if the amino acid sequence YGGSGAS is inserted at the threonine listed at amino acid 145 of SEQ ID NO:1. The

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specification teaches that the amino acid of GFP (not YFP) from which all other fluorescent proteins are derived has a tyrosine located at amino acid 145 (page 2, lines 10-15). Thus there appears to be inconsistencies regarding what protein is listed in SEQ ID NO:1.

10. Further inspection of SEQ ID NO: 1 reveals some peculiarities. A review of the amino acids present in SEQ ID NO: 1 only reveal 4 amino acids total: Alanine, Threonine, Glycine and Cystine, represented by the three letter codes Ala, Thr, Gly and Cys respectively. If converted into single letter code the amino acid residues are all "A" "T" "G" or "C" in SEQ ID NO:1. The peptide sequence for GFP listed in Genbank Accession Number P42212 has the following amino acid sequence:

11. MSKGEELFTGVVPILVELDGDVNGHKFSVSGEGEGDATYGKLTCLKFICTTGKLP
VPWPTLVTTFSYGVQCFSRYPDHMKQHDFKSA MPEGYVQERTIFFKDDGNYKTRAE
VKFEGDTLVNRIELKGIDFKEDGNILGHKLEYNYNSHNVYIMADKQKNGIKVNFKIRHNI
EDGSVQLADHYQQNTPIGDGPVLLPDNHYLSTQSALSKDPNEKRDHMLLEFVTAAGI
THGMDELYK

12. This sequence for GFP clearly has more amino acid types included in the sequence. If one takes the *single letter code* for the amino acids listed in SEQ ID NO: 1 (ATGC) and lists them out, they comprise the following sequence starting at amino acid 1:

A T G / G T G / A G C / A A G / G G C / G A G / G A G / C T G / T T C / A C C

Further inspection of other sequence IDs provided by applicant reveals nucleotide SEQ ID NO: 13, which is listed as "Bio-Cart for Calcium". The nucleotide

sequence for SEQ ID NO: 13 has the following nucleotide sequence starting at nucleotide 1:

A T G / G T G / A G C / A A G / G G C / G A G / G A G / C T G / T T C / A C C

There is 100% nucleotide match between the two for the first few bases. It appears that applicant may have inadvertently converted the individual nucleotides "A" "T" "G" or "C" into amino acids, instead of the ATG, GTG, AGC, AAG codons revealing the correct amino acid sequence.

It is unclear if the amino acid sequence of SEQ ID NO:1 is the amino acid sequence applicants intend, as there is no Tyrosine at amino acid 145, nor is there a Tyrosine (or any other amino acid besides Alanine, Threonine, Glycine, and Cysteine) listed in SEQ ID NO:1 at all. It is unclear if SEQ ID NO:1 is supposed to be a full length YFP (GFP?) or the short YGGSGAS sequence listed in the claim. It is unclear how a peptide can comprise only the 4 amino acids Alanine, Threonine, Glycine and Cysteine and still produce a viable fluorescent protein. Thus since all claims depend upon Claim 1, a skilled artisan would be unable to determine the metes and bounds of the claimed invention.

13. Claim 4 (and dependent claims) recites an enhanced inserted yellow fluorescent protein of claim 1, wherein the 192nd amino acid of Proline is replaced by Leucine (SEQ ID NO:2). However there is no Proline at amino acid 192, or listed anywhere, in SEQ ID NO:2 at all. There is no Leucine listed in SEQ ID NO: 2 either. The specification teaches that the amino acid of GFP (not YFP) from which all other fluorescent proteins are derived has a Tyrosine located at amino acid 145, and yet the sequence does not

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have any Tyrosines. Thus there appears to be inconsistencies regarding what protein is listed in SEQ ID NO:2.

14. Further inspection of SEQ ID NO: 2 reveals some peculiarities that were noted for SEQ ID NO: 1. A review of the amino acids present in SEQ ID NO: 2 only reveals 4 amino acids total: Alanine, Threonine, Glycine and Cystine, represented by the three letter codes Ala, Thr, Gly and Cys respectively. Thus, if the amino acid sequences listed for SEQ ID NO: 2 are converted into single letter code, they are all "A" "T" "G" or "C".

The peptide sequence for GFP listed in Genbank Accession Number P42212 has the following amino acid sequence:

15. MSKGEELFTGVVPILVELDGDVNGHKFSVSGEGEGDATYGKLTCLKFICTTGKLP
VPWPTLVTTFSYGVQCFSRYPDHMKQHDFFKSAMPEGYVQERTIFFKDDGNYKTRAE
VKFEGDTLVNRIELKGIDFKEDGNILGHKLEYNYNSHNVYIMADKQKNGIKVNFKIRHNI
EDGSVQLADHYQQNTPIGDGPVLLPDNHYLSTQSALSKDPNEKRDHMLLEFVTAAGI
THGMDELYK

16. This sequence for GFP clearly has more amino acid types included in the sequence. If one takes the single letter code for the amino acids listed in SEQ ID NO: 2 (ATGC) and lists them out, they comprise the following sequence starting at amino acid 1:

A T G / G T G / A G C / A A G / G G C / G A G / G A G / C T G / T T C / A C C

Further inspection of other sequence IDs provided by applicant reveals nucleotide SEQ ID NO: 13, which is listed as "Bio-Cart for Calcium". The nucleotide

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sequence for SEQ ID NO: 13 has the following nucleotide sequence starting at nucleotide 1:

A T G/ G T G/ A G C/ A A G/ G G C/ G A G/ G A G/ C T G/ T T C/ A C C

There is 100% nucleotide match between the two, at least for the first few bases. It appears that applicant inadvertently converted the individual nucleotides "A" "T" "G" or "C" into amino acids, instead of the ATG, GTG, AGC, AAG codons revealing the correct amino acid sequence.

Thus it is unclear if the amino acid sequence of SEQ ID NO:2 is the amino acid sequence applicants intend, as there is no Tyrosine at amino acid 145, nor is there a Proline at amino acid 192 (or any other amino acid besides Alanine, Threonine, Glycine, and Cytosine). It is unclear if SEQ ID NO:2 is supposed to be a full length YFP (GFP?) or the short YGGSGAS sequence listed in claim 1. It is unclear how a peptide can comprise only the 4 amino acids Alanine, Threonine, Glycine and Cystine and still produce a viable fluorescent protein. Thus since all claims depend upon Claim 4, a skilled artisan would be unable to determine the metes and bounds of the claimed invention.

Conclusion

No claims are allowed.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly A. Makar, Ph.D. whose telephone number is 571-272-4139. The examiner can normally be reached on 8AM - 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Irem Yucel, Ph.D. can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kam/12/31/06


DAVID GUZO
PRIMARY EXAMINER
